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(54) **FOLDABLE TABLE**

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(76) **Inventor: Wen-Sheng Lin, Kaohsiung City (TW)**

Correspondence Address:  
**LUEDEKA, NEELY & GRAHAM, P.C.**  
**P O BOX 1871**  
**KNOXVILLE, TN 37901 (US)**

(57) **ABSTRACT**

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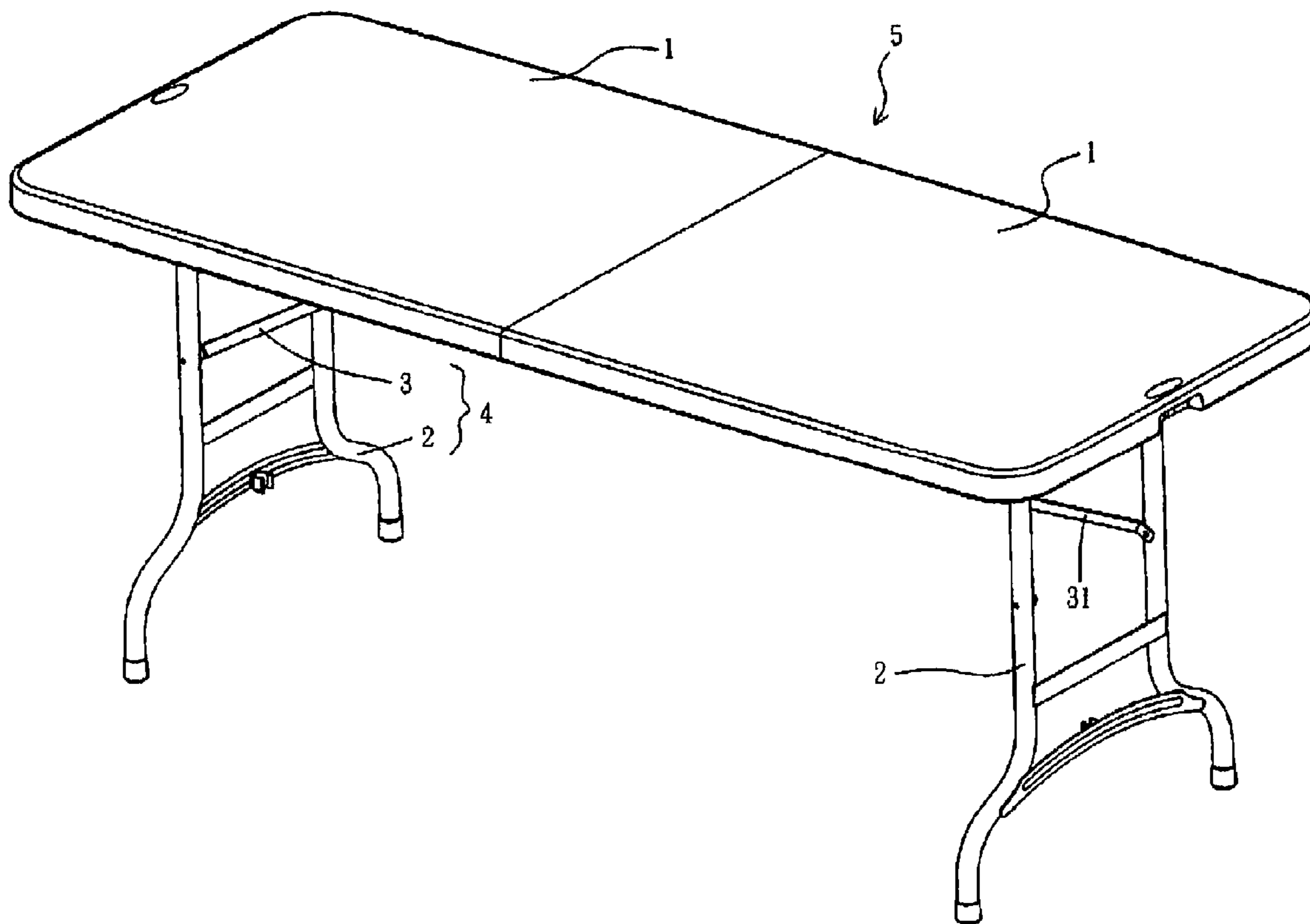
**Related U.S. Application Data**

(63) Continuation-in-part of application No. 11/383,776, filed on May 17, 2006, which is a continuation-in-part of application No. 10/763,155, filed on Jan. 21, 2004, now abandoned.

**Publication Classification**

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**A47B 3/00 (2006.01)**

A collapsible table has a blow-molded tabletop comprising two table top halves. Each tabletop half has a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge. A hinge assembly pivotally connects the two tabletop halves along their inner edges, allowing the two tabletop halves to be folded together into a storage position. Four collapsible legs are attached to the bottom surface of the tabletop halves. Each collapsible leg is operable to collapse independently of any of the other legs. A first pair of the legs collapse to positions which are substantially parallel to the outer edges of the tabletop halves, and a second pair of the legs collapse to positions which are substantially diagonal to the outer edges of the tabletop halves.



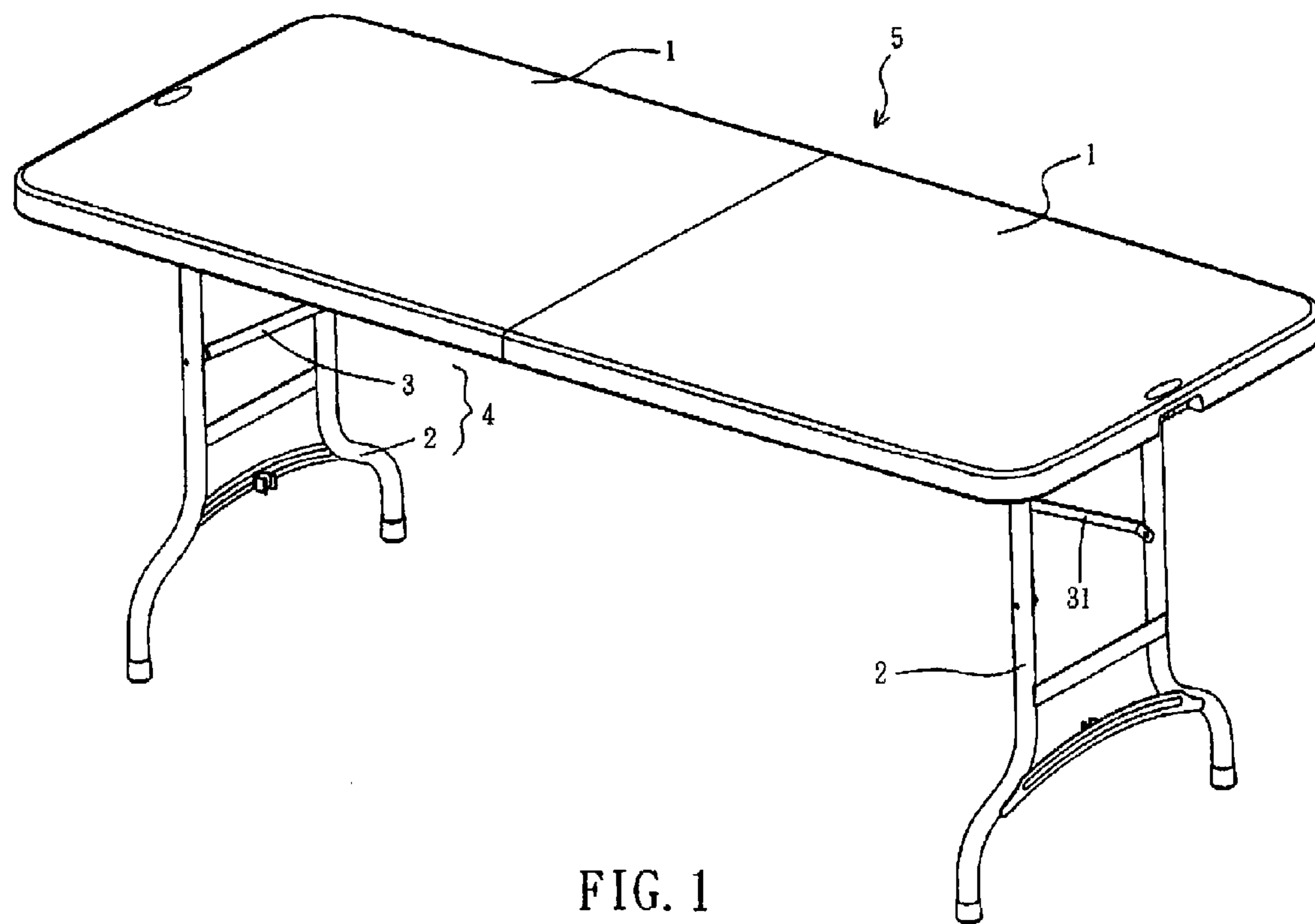


FIG. 1



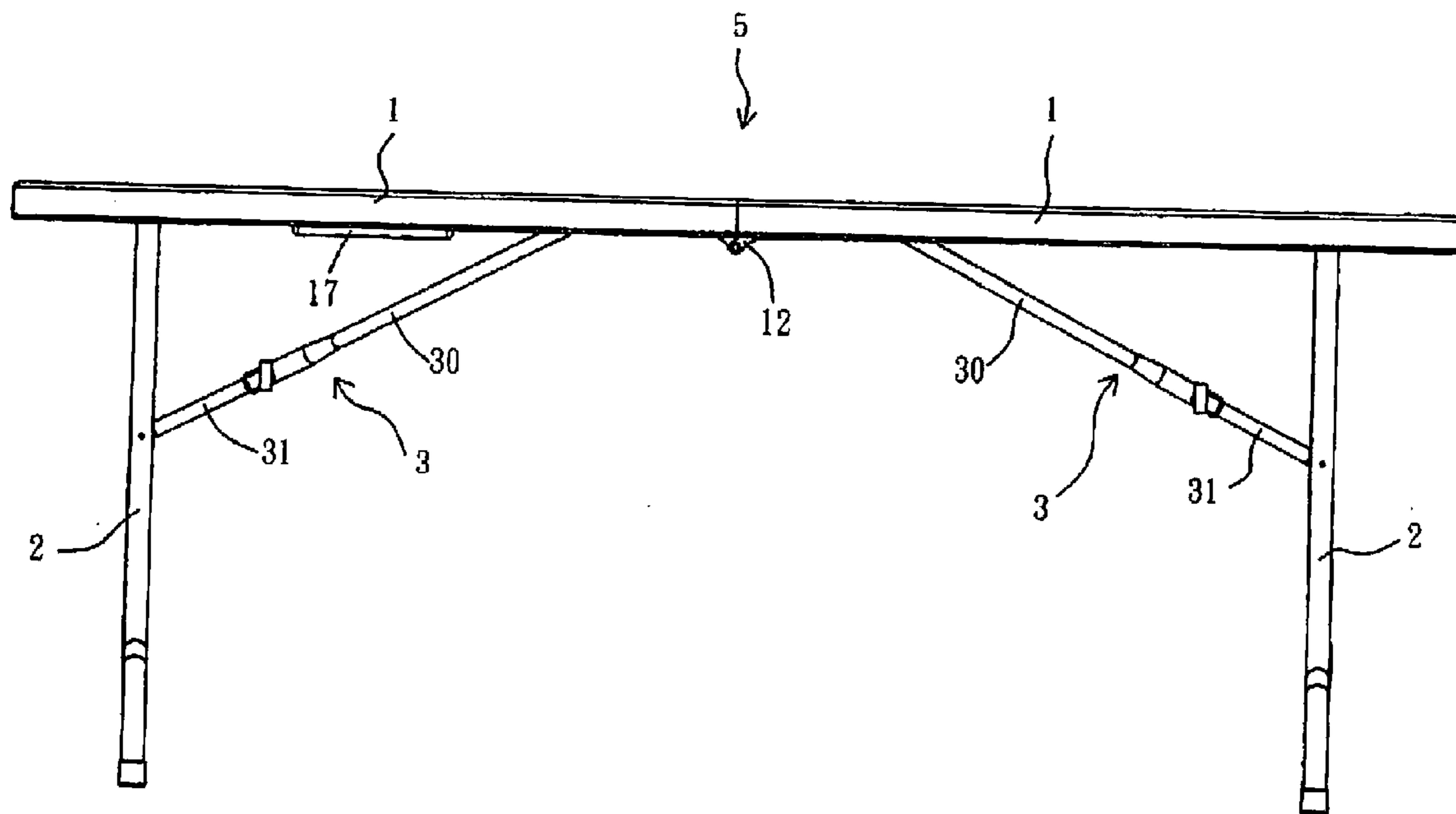


FIG. 3

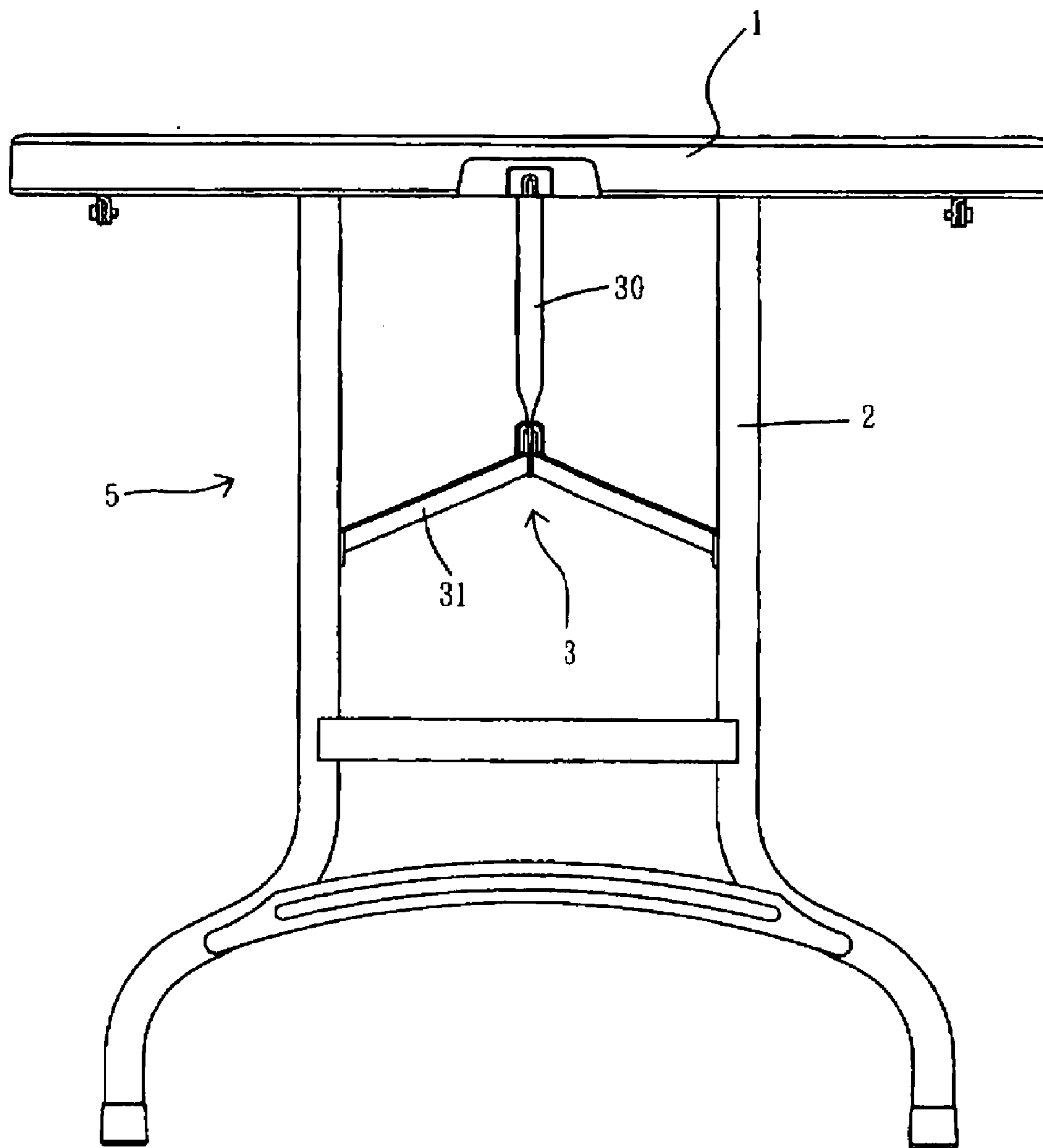


FIG. 4

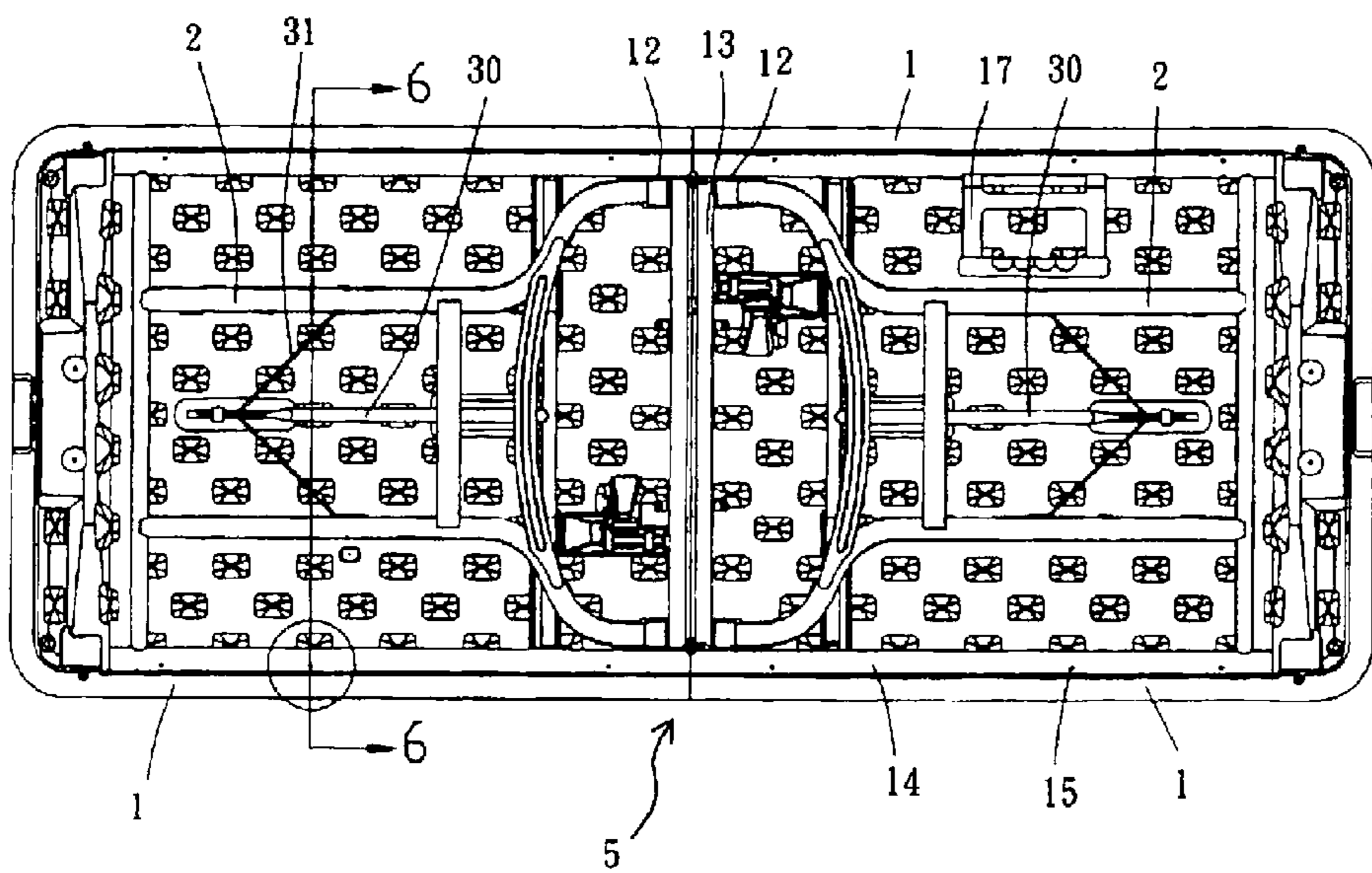


FIG. 5

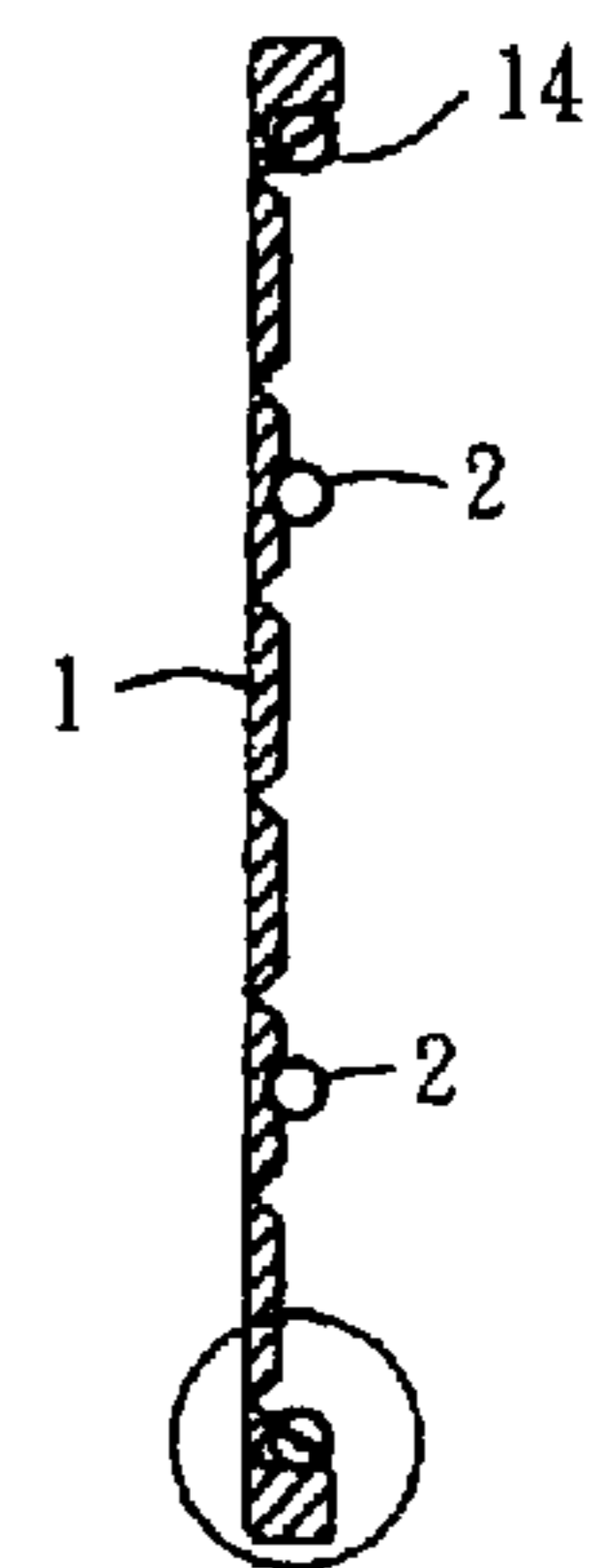


FIG. 6

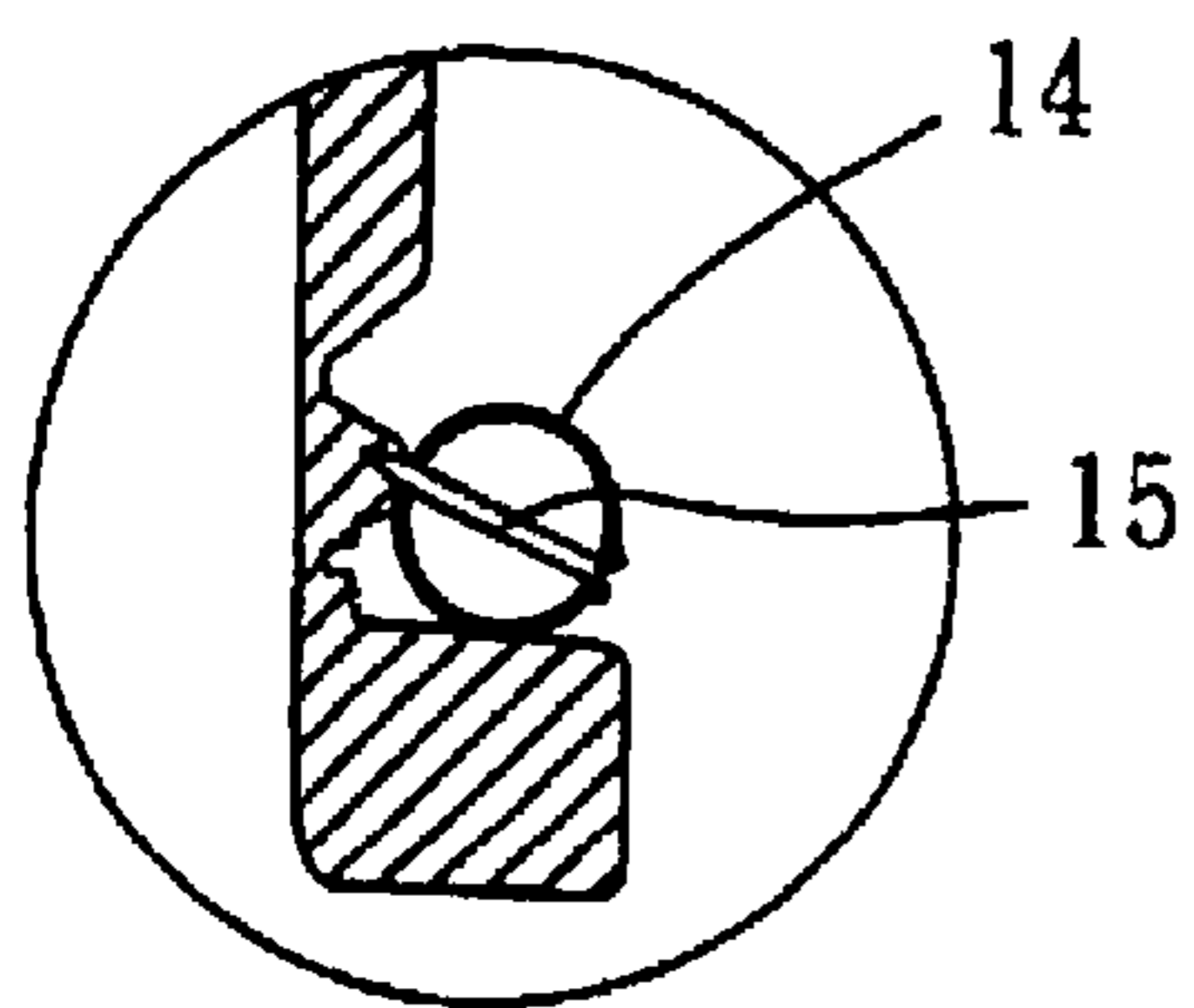


FIG. 7

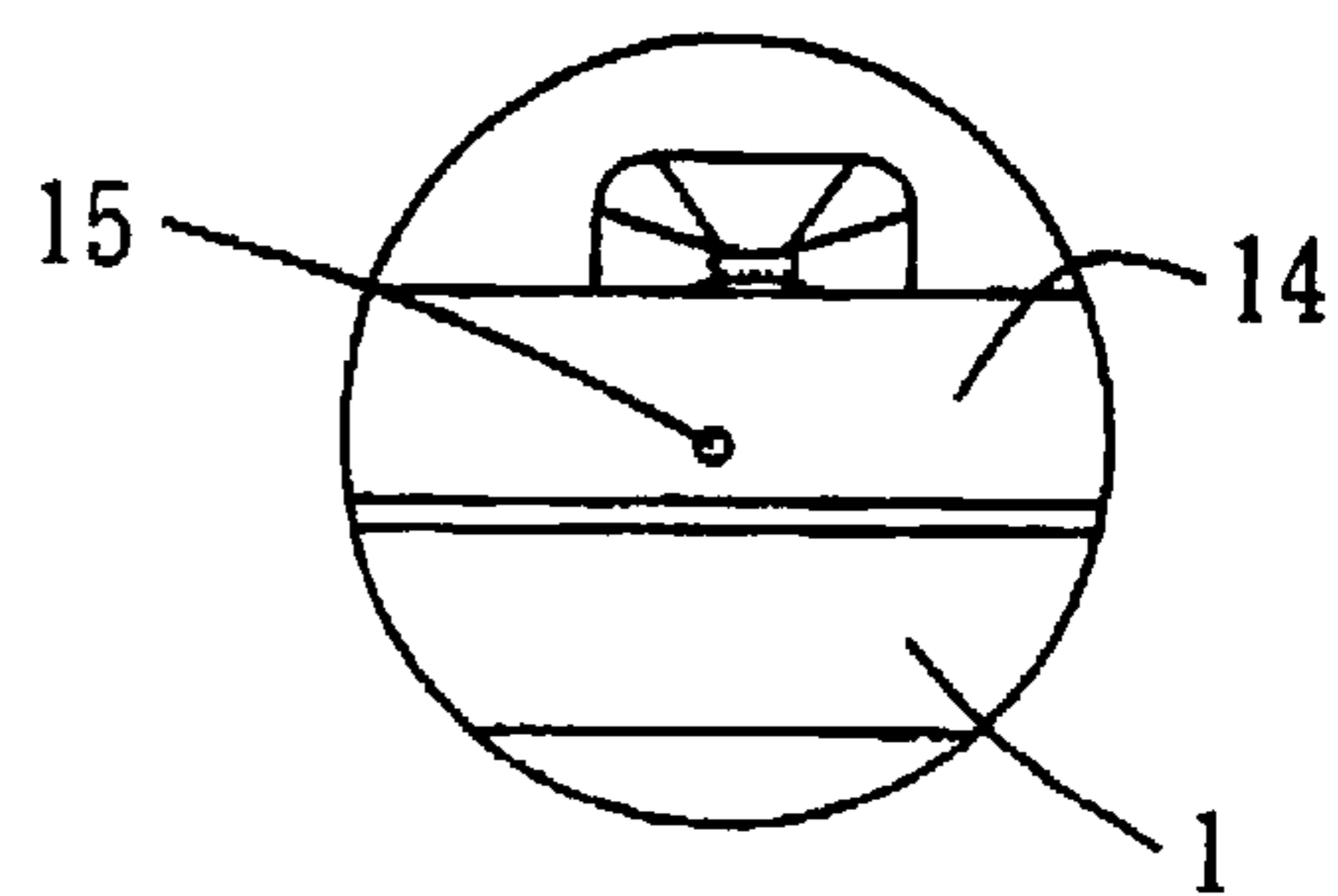


FIG. 8

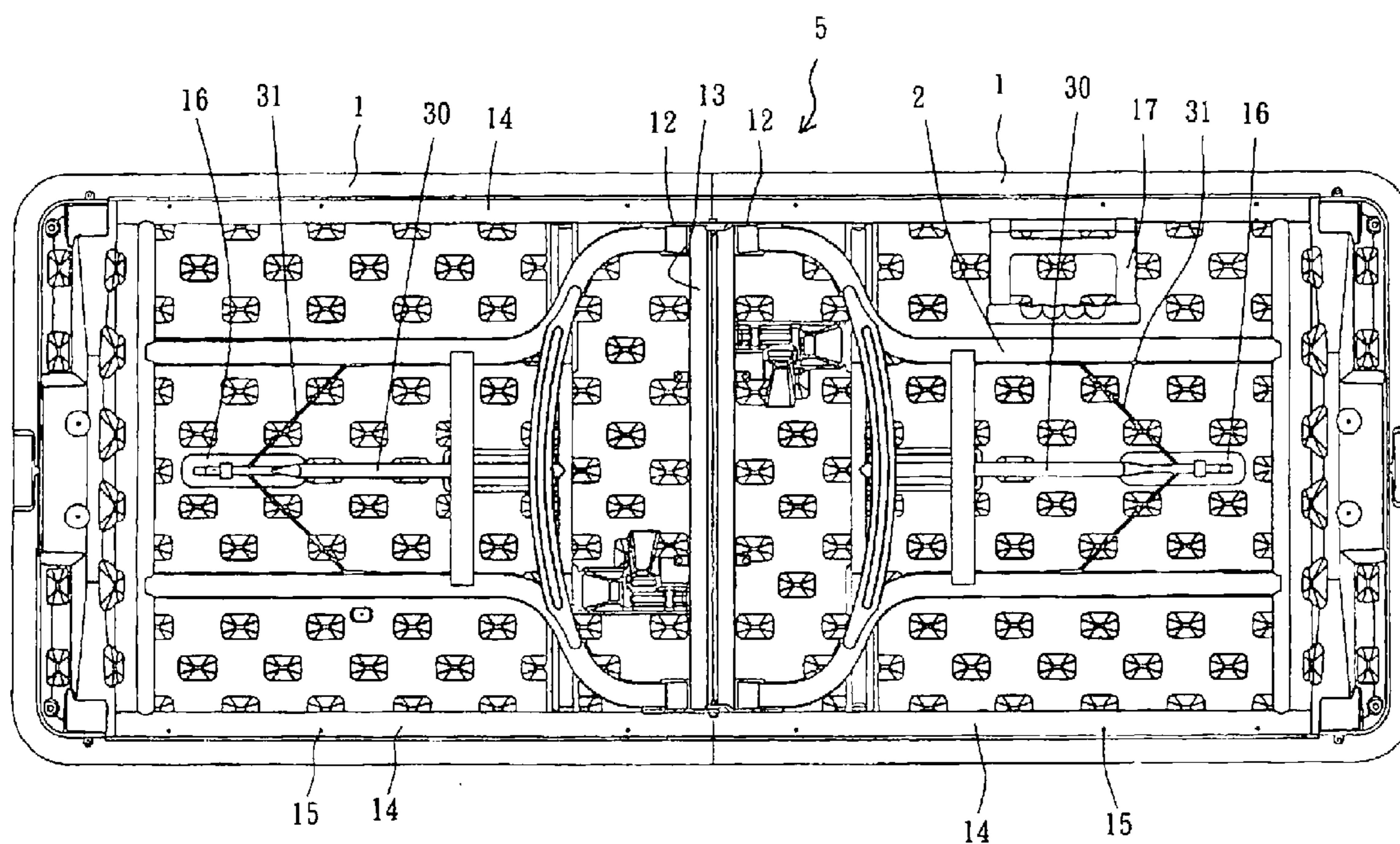


FIG. 9



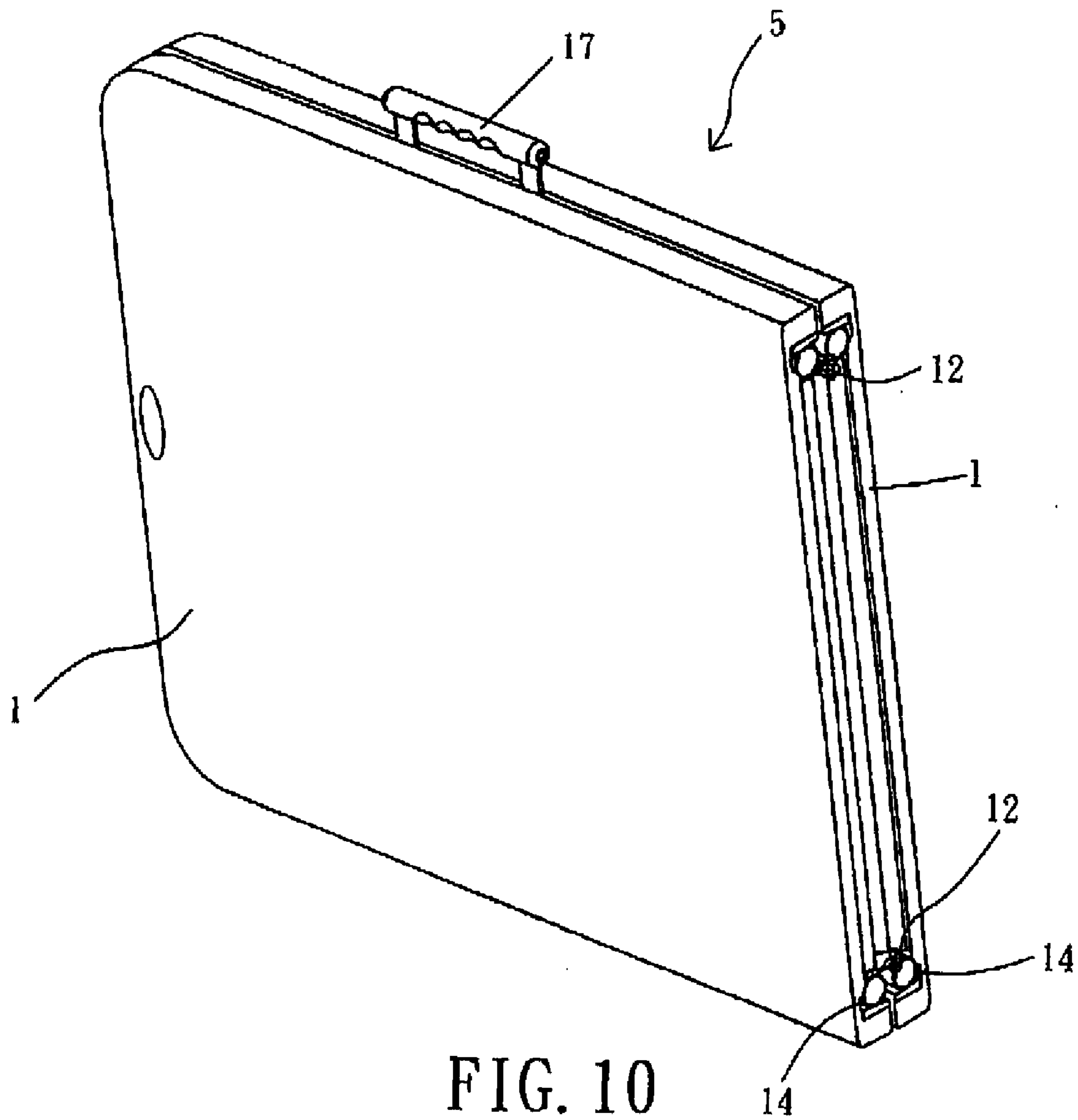
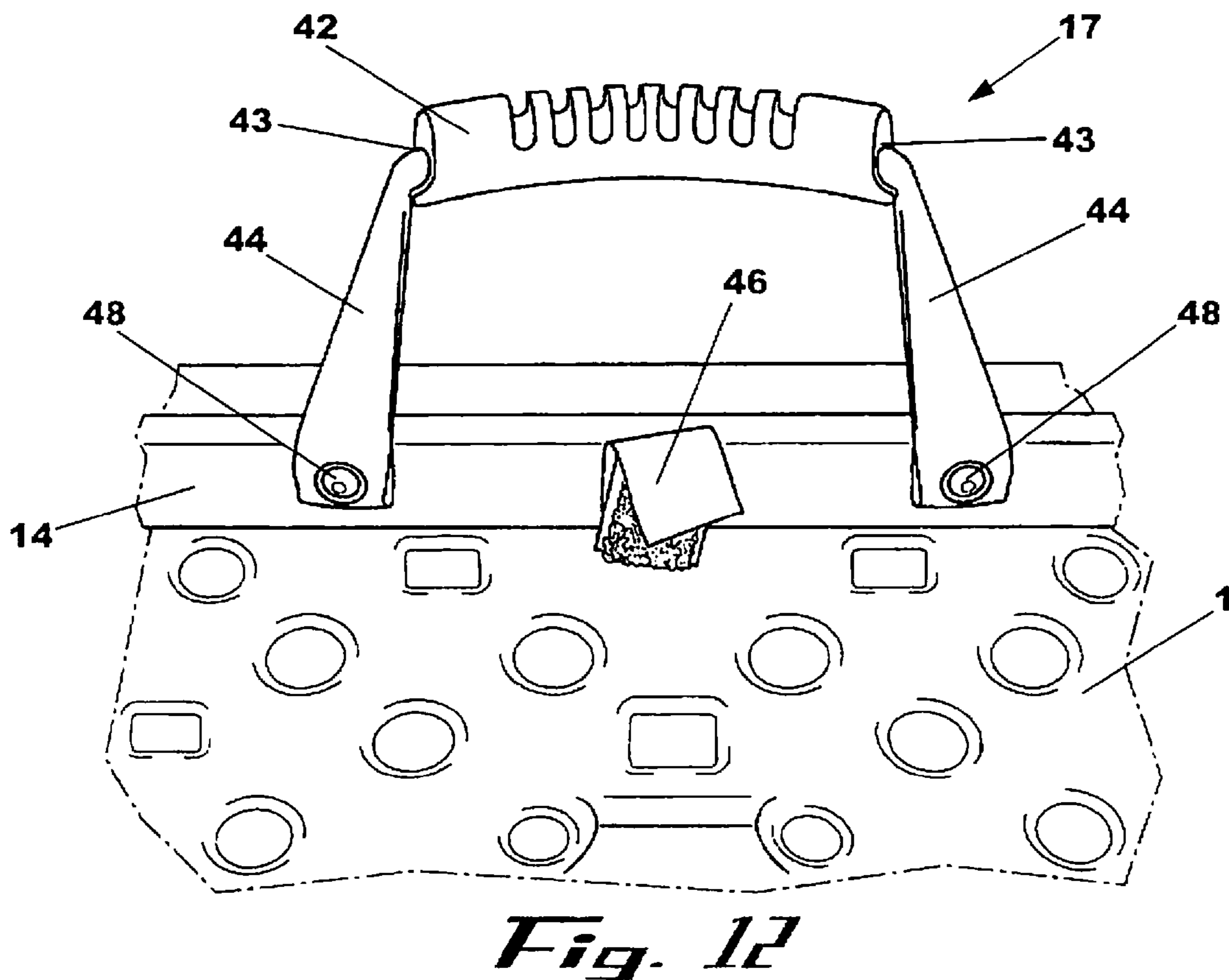
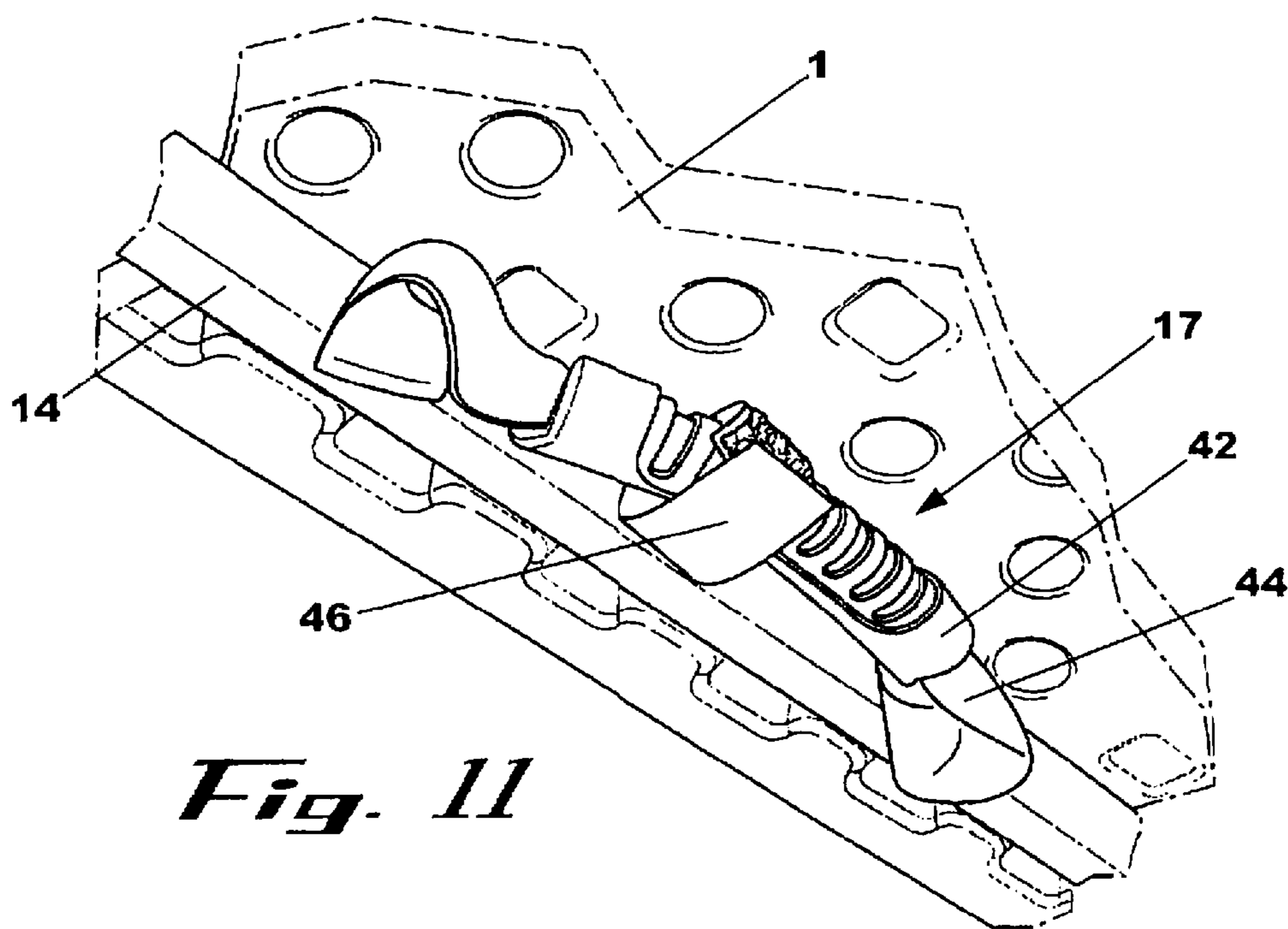


FIG. 10



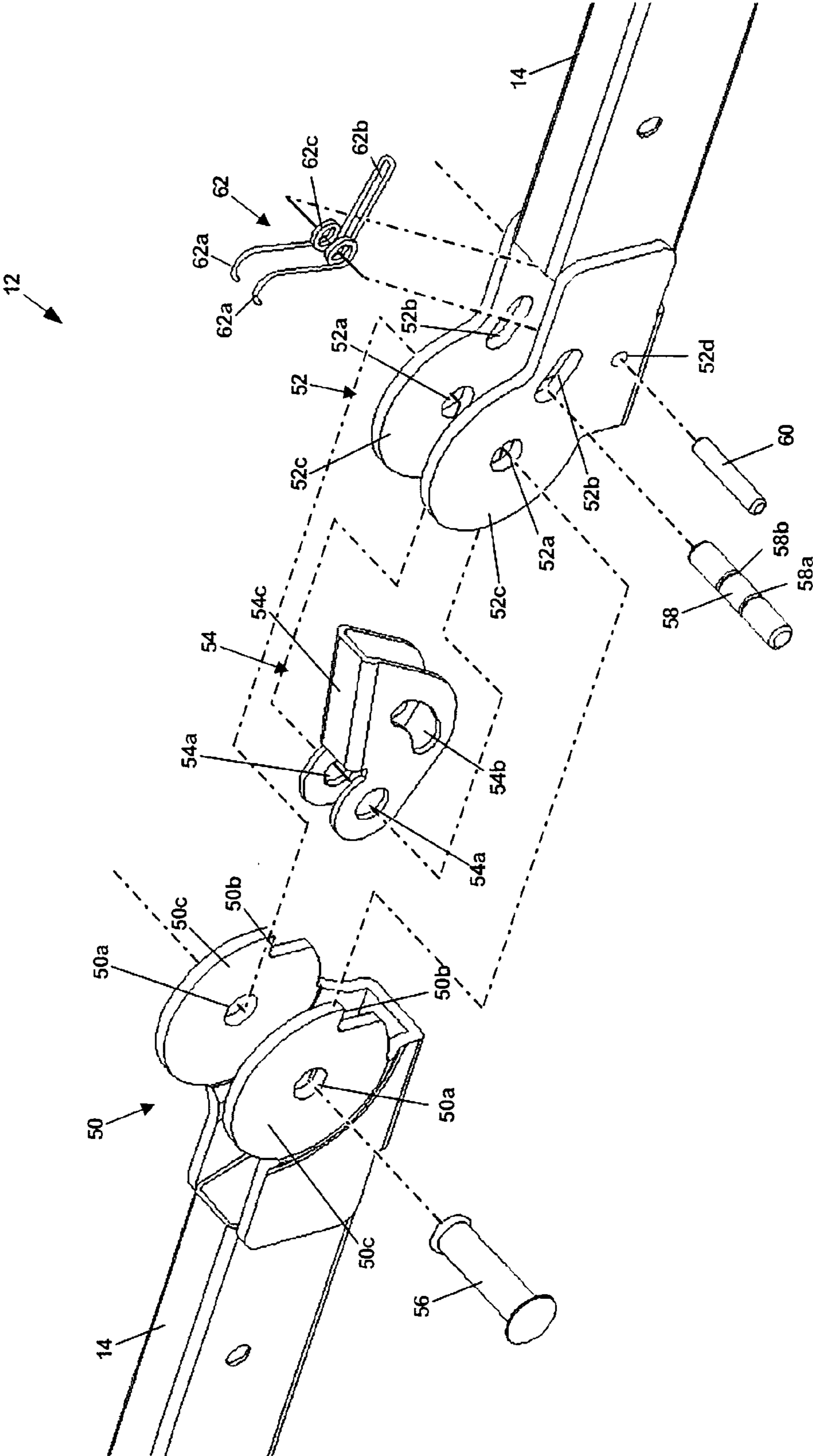
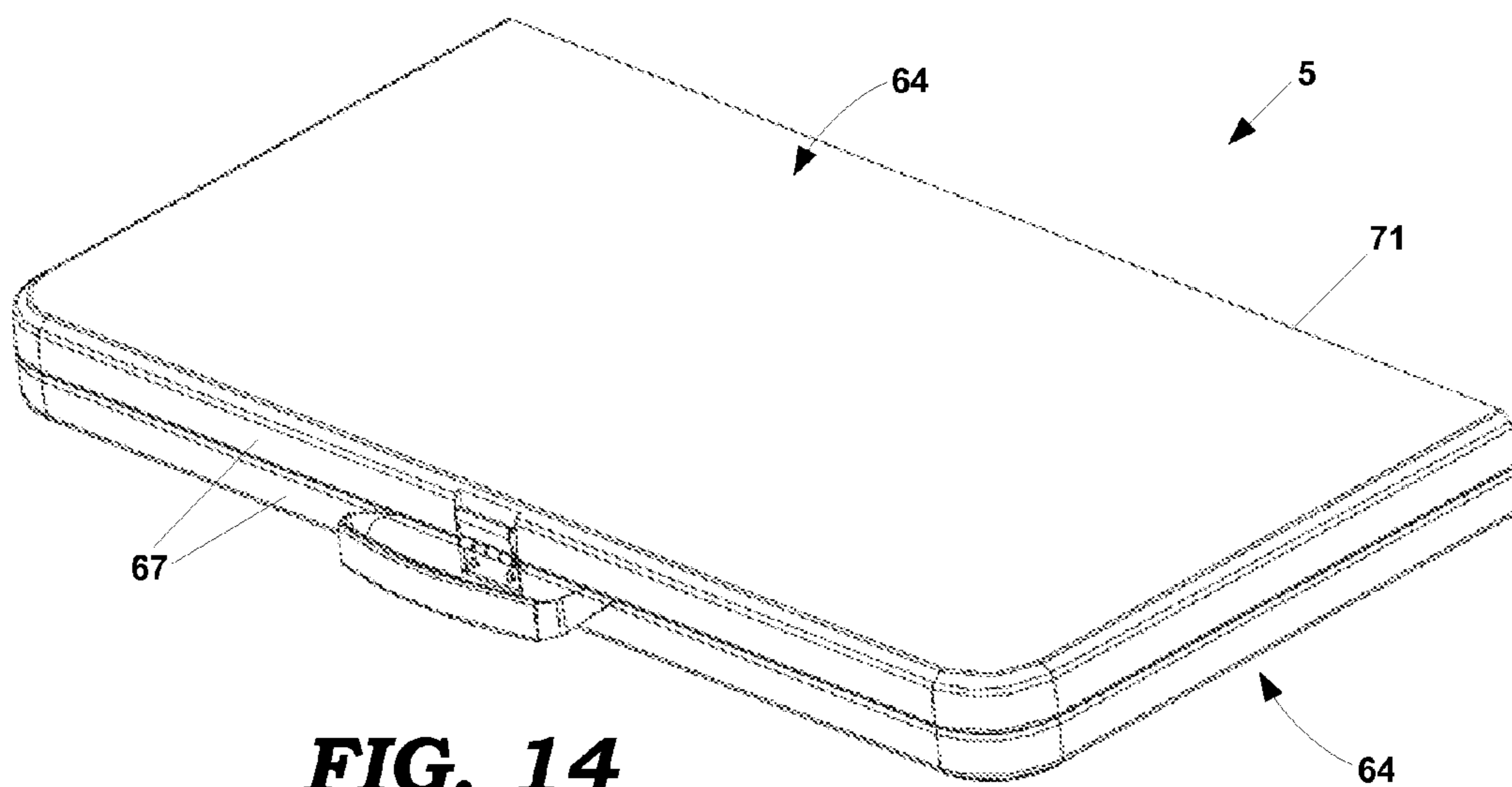
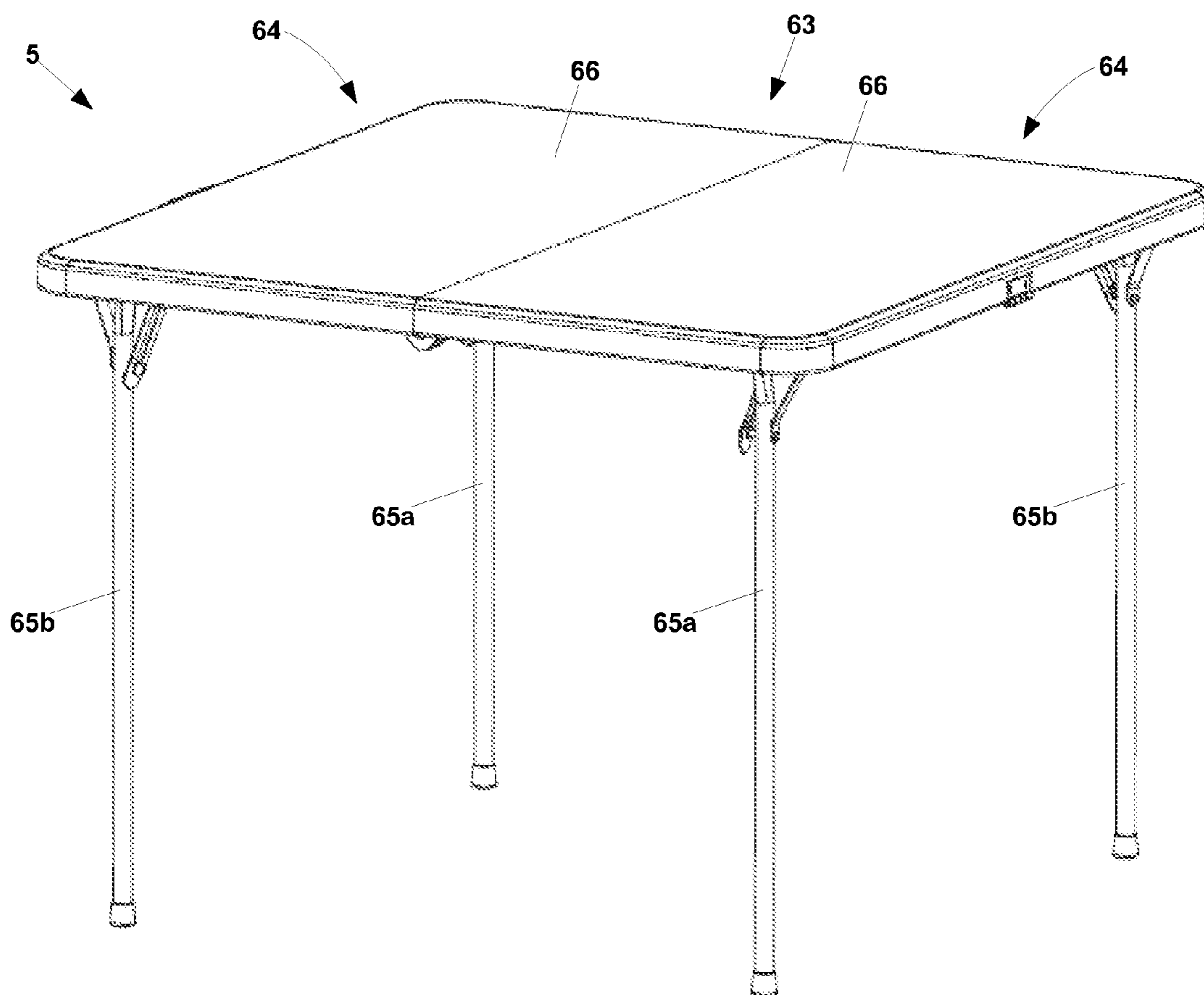


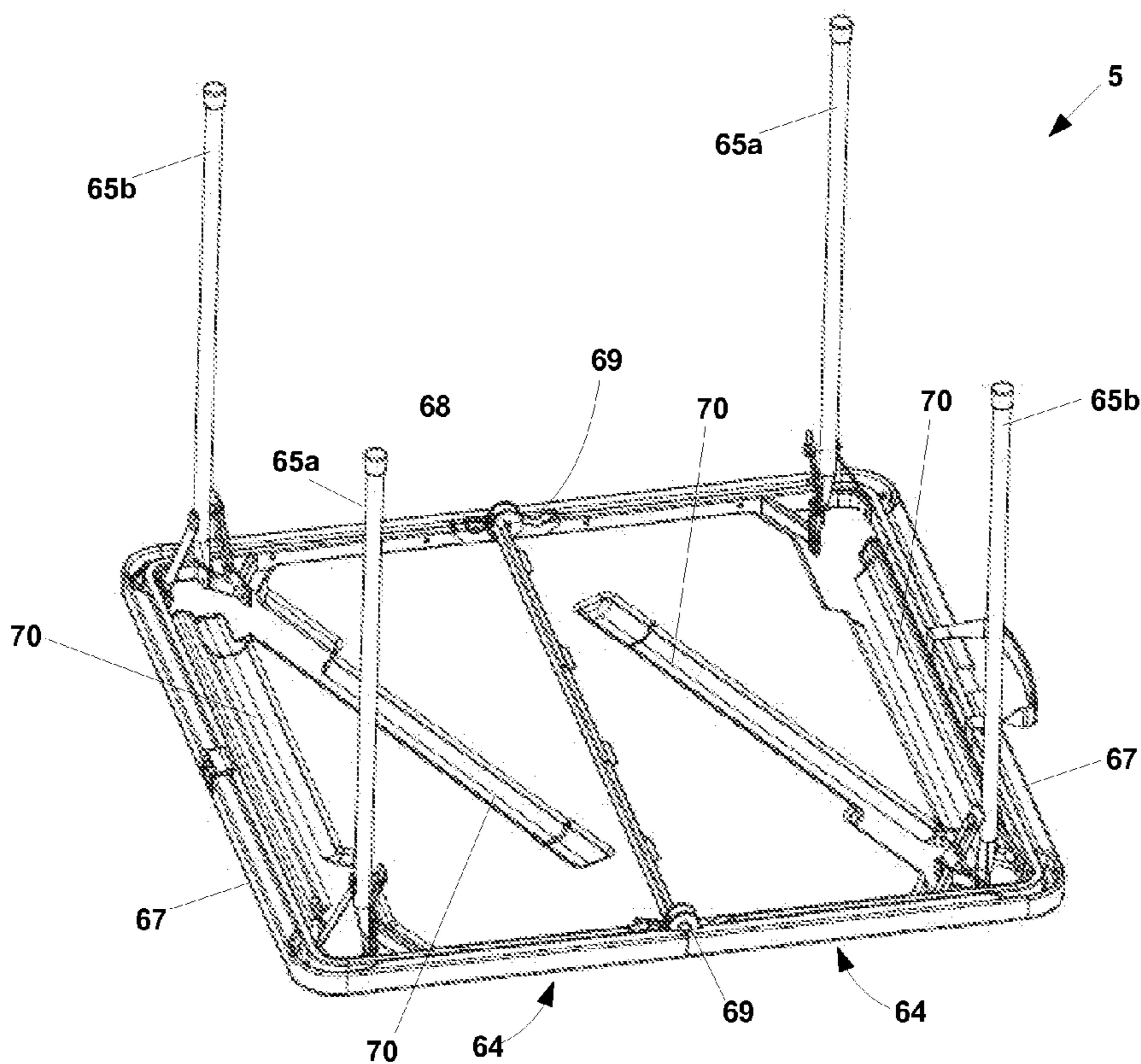
FIG. 13



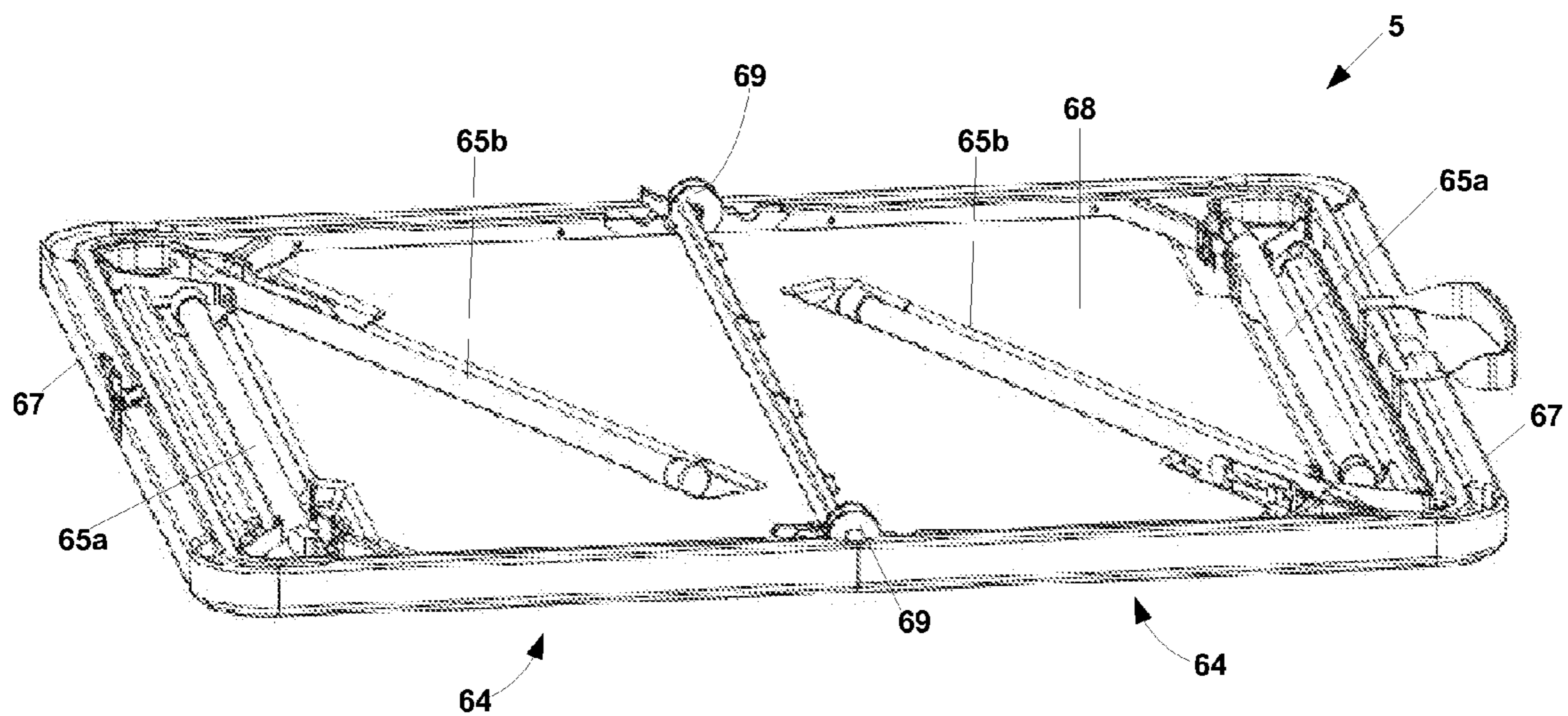
**FIG. 14**



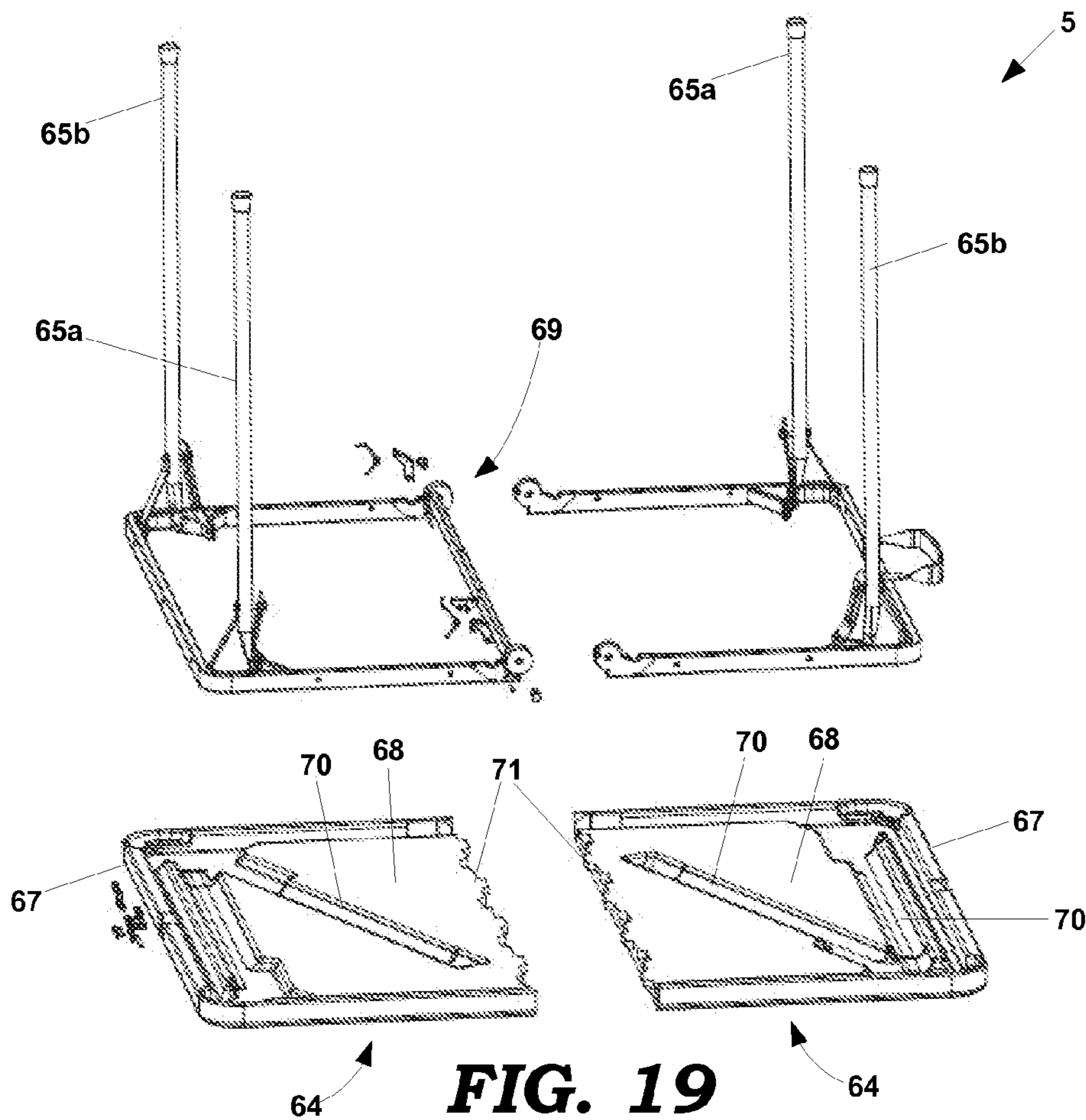
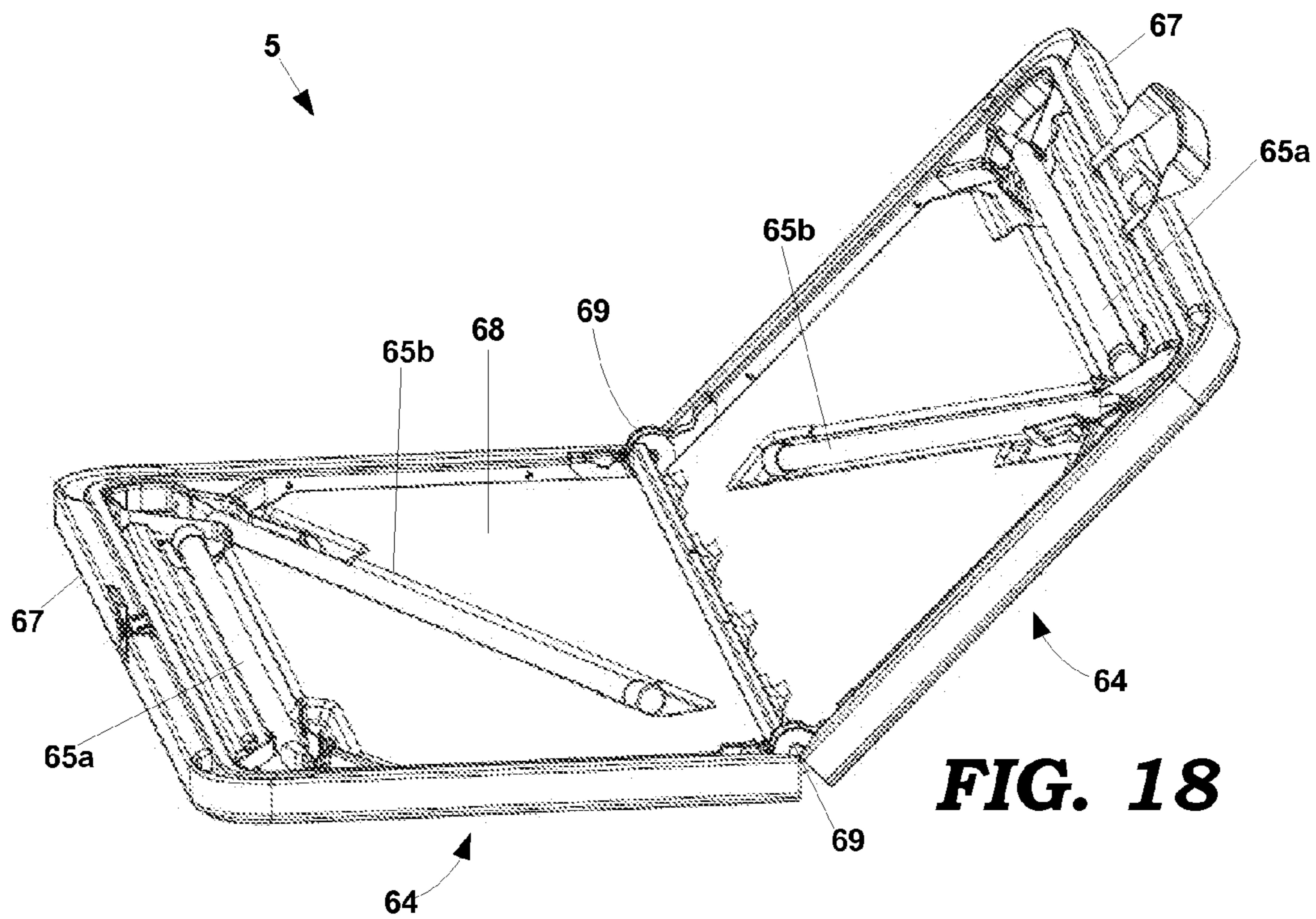
**FIG. 15**



**FIG. 16**



**FIG. 17**



## FOLDABLE TABLE

[0001] This application claims priority as a continuation-in-part of co-pending U.S. patent application Ser. No. 11/383,776 filed on May 17, 2006, which is a continuation-in-part of application Ser. No. 10/763,155 filed Jan. 21, 2004, now abandoned.

### FIELD

[0002] The present invention relates to a foldable table, and more particularly to a foldable table that is folded when not in use, thereby saving space of storage, package and transportation.

### BACKGROUND AND SUMMARY

[0003] A conventional table is available for providing a support effect, thereby facilitating the user using the table. However, the conventional table has a fixed structure and cannot be folded when not in use, thereby increasing space of storage, and thereby causing inconvenience in storage, package and transportation.

[0004] The primary objective of the present invention is to provide a foldable table that is supported rigidly and stably when being expanded and is folded when not in use, thereby enhancing the versatility of foldable table.

[0005] Another objective of the present invention is to provide a foldable table, wherein the handle is pivoted outward to protrude from the two table boards, thereby facilitating the user carrying the foldable table.

[0006] A further objective of the present invention is to provide a foldable table that is folded when not in use, thereby saving space of storage, package and transportation.

[0007] In accordance with the present invention, there is provided a foldable table, comprising two table boards pivotally connected with each other, and two support units each foldably mounted on a respective one of the two table boards, wherein:

[0008] each of the two table boards has a bottom formed with a receiving space; and

[0009] each of the support units is mounted in the receiving space of a respective one of the two table boards and includes a support stand having an end pivotally mounted on a first end of the respective table board, and a support member pivotally mounted on a second end of the respective table board and pivotally connected with the support stand.

[0010] A preferred embodiment of the invention provides a collapsible table having a substantially square tabletop. The tabletop includes two tabletop halves. Each tabletop half has a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge. A hinge assembly pivotally connects the two tabletop halves along their inner edges to enable the two tabletop halves to be folded together into a storage position. Attached to the bottom surface of the tabletop are legs that are collapsible to a position adjacent to the bottom surface of the tabletop.

[0011] In another embodiment, the invention provides a collapsible table having two tabletop halves, each half having a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing

outer edge which is substantially parallel to the inner edge. A hinge assembly pivotally connects the two tabletop halves along their inner edges so that the two tabletop halves can be folded together into a storage position. Attached to the bottom surface of the tabletop are four collapsible legs that are each operable to collapse independently of any of the other legs.

[0012] In yet another embodiment, the invention provides a collapsible table having two tabletop halves, each half having a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge. A hinge assembly pivotally connects the two tabletop halves along their inner edges so that the two tabletop halves can be folded together into a storage position. Attached to the bottom surface of the tabletop are four collapsible legs. A first pair of the legs are operable to collapse to positions which are substantially parallel to the outer edges of the tabletop halves. A second pair of the legs are operable to collapse to positions which are substantially diagonal to the outer edges of the tabletop halves.

[0013] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Further advantages of the invention are apparent by reference to the detailed description in conjunction with the figures, wherein elements are not to scale so as to more clearly show the details, wherein like reference numbers indicate like elements throughout the several views, and wherein:

[0015] FIG. 1 is a perspective view of a foldable table in accordance with the preferred embodiment of the present invention;

[0016] FIG. 2 is a bottom perspective view of the foldable table as shown in FIG. 1;

[0017] FIG. 3 is a front plan view of the foldable table as shown in FIG. 1;

[0018] FIG. 4 is a side plan view of the foldable table as shown in FIG. 1;

[0019] FIG. 5 is a bottom plan folded view of the foldable table as shown in FIG. 1;

[0020] FIG. 6 is a plan cross-sectional view of the foldable table taken along line 6-6 as shown in FIG. 5;

[0021] FIG. 7 is a partially enlarged view of the foldable table as shown in FIG. 6;

[0022] FIG. 8 is a partially enlarged view of the foldable table as shown in FIG. 5;

[0023] FIG. 9 is a partially enlarged view of the foldable table as shown in FIG. 5;

[0024] FIG. 10 is a perspective folded view of the foldable table in accordance with the preferred embodiment of the present invention;

[0025] FIG. 11 depicts a handle for carrying the foldable table according to a preferred embodiment of the invention, wherein the handle is in a stowed position;

[0026] FIG. 12 depicts a handle for carrying the foldable table according to a preferred embodiment of the invention, wherein the handle is in a use position;

[0027] FIG. 13 depicts a hinge mechanism according to a preferred embodiment of the invention;

[0028] FIG. 14 is a perspective view of a substantially square foldable table in accordance with a preferred embodiment of the invention, wherein the table is in its folded position;

[0029] FIG. 15 is a perspective view of a substantially square foldable table in accordance with a preferred embodiment of the invention;

[0030] FIG. 16 is a bottom perspective view of a substantially square foldable table in accordance with a preferred embodiment of the invention, wherein the collapsible legs are extended;

[0031] FIG. 17 is a bottom perspective view of a rectangular foldable table in accordance with an alternative embodiment of the invention, wherein the collapsible legs are in a collapsed position;

[0032] FIG. 18 is a bottom perspective view of a rectangular foldable table in accordance with an alternative embodiment of the invention, wherein the collapsible legs are in a collapsed position and the table is partially folded; and

[0033] FIG. 19 depicts an exploded view of a rectangular foldable table according to an alternative embodiment of the invention.

#### DETAILED DESCRIPTION

[0034] Referring to the drawings and initially to FIGS. 1-8, a foldable table 5 in accordance with the preferred embodiment of the present invention comprises two table boards 1 pivotally connected with each other, and two support units 4 each foldably mounted on a respective one of the two table boards 1.

[0035] The two table boards 1 are pivotally connected with each other by two pivot members 12. Each of the two table boards 1 has a bottom formed with a receiving space 11. The foldable table further comprises two juxtaposed reinforcement members 13 each secured on an edge of a respective one of the two table boards 1. The receiving space 11 of each of the two table boards 1 has two sides each provided with a support tube 14 secured on each of the two table boards 1 by a plurality of screws 15 as shown in FIGS. 6-8.

[0036] Each of the support units 4 is mounted in the receiving space 11 of a respective one of the two table boards 1 and includes a support stand 2 having an end pivotally mounted on a first end of the respective table board 1, and a support member 3 pivotally mounted on a second end of the respective table board 1 and pivotally connected with the support stand 2.

[0037] The support member 3 of each of the support units 4 includes a substantially T-shaped support bar 30 having a first end pivotally mounted on the second end of the respective table board 1, and a substantially V-shaped extension bar 31 having a first end pivotally mounted on a second end

of the support bar 30 and a second end pivotally mounted on a mediate portion of the support stand 2.

[0038] The receiving space 11 of each of the two table boards 1 is formed with a plurality of receiving recesses 16 for receiving the support stand 2 and the support member 3 of each of the support units 4 when being folded.

[0039] As shown in FIG. 5, the foldable table 5 further comprises a handle 17 pivotally mounted on either one of the two table boards 1.

[0040] In practice, as shown in FIGS. 1-4, the support stand 2 of each of the support units 4 is pulled outward relative to the respective table board 1 to drive the support member 3 to extend outward, thereby fully stretching the support member 3, so that the two table boards 1 are supported by the support units 4 rigidly and stably, thereby fully expanding the foldable table 5 as shown in FIG. 1.

[0041] As shown in FIGS. 5-10, when the user wishes to fold the foldable table 5, the support stand 2 of each of the support units 4 is pressed toward the respective table board 1 to drive the support member 3 to move and pivot inward, thereby folding the support member 3 and the support stand 2 into the receiving recesses 16 of the respective table board 1, so that the two table boards 1 are pivoted relative to each other, thereby folding the foldable table 5 as shown in FIG. 10. At this time, the handle 17 is pivoted outward to protrude from the two table boards 1, thereby facilitating the user carrying the foldable table 5.

[0042] FIGS. 11 and 12 depict an alternative embodiment of the invention wherein the handle 17 comprises a flexible strap 44 having a central grip portion 42. The grip portion 42 preferably includes a passage 43 through which the strap 44 passes. Each end of the strap 44 is attached to the support tube 14 using fasteners 48, such as rivets or screws. The strap 44 is preferably constructed from a heavyweight woven nylon material, such as may be used in cargo straps. The grip portion 42 is preferably molded from a flexible plastic or high-density foam material.

[0043] FIG. 11 depicts the handle 17 disposed in a stowed position, wherein the grip portion 42 is releasably secured adjacent the bottom surface of the table top 1. In the stowed position, the handle 17 is generally hidden from view and does not hang down where it may contact a leg of someone sitting at the table. In the preferred embodiment, ends of the retaining strap 46 are secured around the grip portion 42 using a closure mechanism, such as a hook-and-loop closure (Velcro™) or a snap closure.

[0044] FIG. 12 depicts the handle 17 disposed in a carrying position, wherein the strap 44 is extended outward from the support tube 14. In this position, a user may easily hold the grip portion 42 for carrying the table 5 when the table 5 is in the folded position (FIG. 10).

[0045] FIG. 13 provides an exploded view of a preferred embodiment of one of the two pivot members 12, also referred to herein as hinge assemblies 12. The hinge assembly 12 includes two hinge members 50 and 52 pivotally connected together by a hinge pin 56 which passes through apertures 50a and 52a in circular tabs 50c and 52c of the hinge members 50 and 52. Preferably, the spacing between the tabs 50c is sufficient to accommodate insertion of the tabs 52c there between.



[0046] The hinge assembly 12 includes a latch member 54 disposed between the tabs 52c of the hinge member 52. As shown in FIG. 13, the hinge pin 56 passes through apertures 54a in the latch member 54 so that the latch member is pivotally connected to the two hinge members 50 and 52. On either side of the latch member 54 are arcuate slots 54b through which passes a pawl pin 58. The pawl pin 58 also passes through slots 52b on either side of the hinge member 52. The pawl pin 58 is operable to slide laterally in the slots 52b between a first position (to the inner end of the slots 52b) and a second position (to the outer end of the slots 52b).

[0047] In the first position, the pawl pin 58 engages notches 50b in the tabs 50c of the hinge member 50, thereby preventing rotation of the hinge member 50 with respect to the hinge member 52. In the second position, the pawl pin 58 disengages the notches 50b, thereby allowing rotation of the hinge member 50 with respect to the hinge member 52.

[0048] As shown in FIG. 13, a spring 62 is connected to the hinge member 52 by way of a spring pin 60. The spring pin 60 passes through apertures 52d in the hinge member 52 and through a coil 62c formed in the spring 62. The spring 62 has spring arms 62a extending from the coil 62c that engage indentions 58a in the pawl pin 58. Due to tension in the coil 62c, the spring arms 62a constantly press against the pawl pin 58, thereby urging the pawl pin 58 toward the first position in the slots 52b.

[0049] When a user applies pressure to the surface 54c of the latch member 54, the latch member 54 rotates in relation to the hinge pin 56. This rotational movement of the latch member 54 urges the pawl pin 58 to slide in the slots 52b toward the second position. This movement of the pawl pin 58 disengages the pawl pin 58 from the notches 50b in the tabs 50c of the hinge member 50, thereby allowing the hinge members 50 and 52 to rotate in relation to each other.

[0050] Thus, when the table boards 1 are unfolded into a coplanar position, the action of the spring 62, pawl pin 58 and notches 50b automatically locks the table boards 1 in the coplanar position. When a user applies pressure to the surface 54c of the latch member, the pawl pin 58 disengages from the notches so that the table boards 1 may be folded together.

[0051] FIGS. 14-16 depict an embodiment of the invention wherein the collapsible table 5 has a substantially square fold-in-half tabletop 63, preferably formed from blow-molded plastic. FIGS. 17-19 depict an alternative embodiment of the invention wherein the collapsible table 5 has a substantially rectangular fold-in-half tabletop 63, also preferably formed from blow-molded plastic. In each embodiment, the tabletop 63 includes two tabletop halves 64, with each half having a substantially planar top surface 66, a bottom surface 68, an inner edge 71, and an opposing outer edge 67 which is substantially parallel to the inner edge 71. As shown in FIG. 19, the two tabletop halves 64 are pivotally connected at their respective inner edges 71 by a hinge assembly 69. The particular type of hinge assembly 69 is not critical to this collapsible table as long as it provides the means for the two tabletop halves 64 to be folded together into a storage position as depicted in FIG. 14. In a preferred embodiment, the hinge assembly 69 is similar to the hinge assembly 12 discussed above and depicted in FIG. 13.

[0052] As shown in FIG. 16, collapsible legs 65a and 65b are attached by way of collapsible bracket assemblies adja-

cent to the outer edges 67 of the bottom surface 68 of the two tabletop halves 64. As shown in FIG. 17, the collapsible legs 65a-65b are operable to collapse to a position adjacent the bottom surface 68 of the tabletop 63. In a preferred embodiment, each of the legs 65a-65b is collapsible independently of any of the other legs 65a-65b. In a preferred embodiment, the bottom surface 68 of the tabletop 63 includes molded receiving channels 70 for receiving each of the legs 65a-65b in their respective collapsed positions.

[0053] In preferred embodiments of the invention, the collapsible legs 65a-65b comprise two pairs of legs. The first pair of legs 65a collapse to positions which are substantially parallel to the outer edges 67 of the tabletop 63, and the second pair of legs 65b collapse to positions which are substantially diagonal to the outer edges 67 of the tabletop 63. The second pair of legs 65b collapse at diagonal angles so that the legs 65b do not interfere with the ability of the tabletop 63 to fold in half along the inner edges 71 of the two tabletop halves 64. Thus, the particular angle at which the second pair of legs 65b collapses can vary as long as the ends of the second pair of legs 65b do not extend beyond the inner edges 71 of either of the tabletop halves 64. In the square tabletop embodiment of FIGS. 14-16, the diagonal collapsed position is at an angle of about 30° in relation to the outer edges 67 of the tabletop 63. In the rectangular tabletop embodiment of FIGS. 17-19, the diagonal collapsed position is at an angle of about 45° in relation to the outer edges 67 of the tabletop 63.

[0054] The foregoing description of preferred embodiments for this invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings. The embodiments are chosen and described in an effort to provide the best illustrations of the principles of the invention and its practical application, and to thereby enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally, and equitably entitled.

What is claimed is:

1. A collapsible table comprising:

a substantially square tabletop comprising a first tabletop half and a second tabletop half, the first and second tabletop halves each having a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge;

a hinge assembly for pivotally connecting the first and second tabletop halves at the inner edges, thereby allowing the first and second tabletop halves to be folded together into a storage position; and

collapsible legs attached to the bottom surfaces of the tabletop halves, the collapsible legs operable to collapse to positions adjacent the bottom surfaces of the first and second tabletop halves.

2. The collapsible table of claim 1 wherein the collapsible legs attached to the bottom surfaces of the tabletop halves

comprise four collapsible legs, wherein each leg is operable to collapsible independently of any of the other legs.

3. The collapsible table of claim 1 wherein the collapsible legs attached to the bottom surfaces of the tabletop halves comprise:

a first pair of legs that collapse to positions which are substantially parallel to the outer edges of the tabletop halves; and

a second pair of legs that collapse to positions which are substantially diagonal to the outer edges of the tabletop halves.

4. The collapsible table of claim 1 wherein the first and second tabletop halves are formed from blow-molded plastic.

5. A collapsible table comprising:

a tabletop comprising a first tabletop half and a second tabletop half, the first and second tabletop halves each having a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge;

a hinge assembly for pivotally connecting the first and second tabletop halves at the inner edges, thereby allowing the first and second tabletop halves to be folded together in a storage position; and

four collapsible legs attached to the bottom surfaces of the tabletop halves, wherein each leg is operable to collapse independently of any of the other legs to a position adjacent the bottom surface of the tabletop half to which the leg is attached.

6. The collapsible table of claim 5 wherein the four collapsible legs attached to the bottom surfaces of the tabletop halves comprise:

a first pair of legs that collapse to positions which are substantially parallel to the outer edges of the tabletop halves; and

a second pair of legs that collapse to positions which are substantially diagonal to the outer edges of the tabletop halves.

7. The collapsible table of claim 5 wherein the first and second tabletop halves are formed from blow-molded plastic.

8. A collapsible table comprising:

a tabletop comprising a first table top half and a second table top half, the first and second tabletop halves each having a substantially planar top surface, a bottom

surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge;

a hinge assembly for pivotally connecting the first and second tabletop halves at the inner edges, thereby allowing the first and second tabletop halves to be folded together in a storage position; and

four collapsible legs attached to the bottom surfaces of the tabletop halves, the collapsible legs comprising:

a first pair of legs operable to collapse to positions adjacent the bottom surfaces of the tabletop halves and substantially parallel to the outer edges of the tabletop halves; and

a second pair of legs operable to collapse to positions adjacent the bottom surfaces of the tabletop halves and substantially diagonal to the outer edges of the tabletop halves.

9. The collapsible table of claim 8 wherein the first and second tabletop halves are formed from blow-molded plastic.

10. A collapsible table comprising:

a substantially square tabletop comprising a first tabletop half and a second tabletop half, the first and second tabletop halves each formed from blow-molded plastic and each having a substantially planar top surface, a bottom surface opposite the top surface, an inner edge, and an opposing outer edge which is substantially parallel to the inner edge;

a hinge assembly for pivotally connecting the first and second tabletop halves at the inner edges, thereby allowing the first and second tabletop halves to be folded together in a storage position; and

four collapsible legs attached to the bottom surfaces of the tabletop halves, wherein each leg is operable to collapse independently of any of the other legs to a position adjacent the bottom surface of the tabletop half to which it is attached, the collapsible legs comprising:

a first pair of legs operable to collapse to positions which are substantially parallel to the outer edges of the tabletop halves; and

a second pair of legs operable to collapse to positions which are substantially diagonal to the outer edges of the tabletop halves.

\* \* \* \* \*